

Hypertension Screening, Diagnosis, and Treatment Gaps in Nigeria: A National Analysis of the 2023-2024 Nigeria Demographic and Health Survey

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Abstract

Background

Hypertension is the leading modifiable risk factor cardiovascular disease (CVD) in Nigeria, yet detection and sustained treatment remain inadequate. The 2023–2024 Nigeria Demographic and Health Survey (NDHS) included new indicators on lifetime blood pressure screening, self-reported provider diagnosis, and treatment behaviors. These indicators have not previously been synthesized into a national hypertension care cascade.

Methods

We conducted a survey-weighted secondary analysis of NDHS 2023–2024 individual-level microdata ($n = 39,050$ women and $n = 10,876$ men aged 15–49) using IBM SPSS Statistics (Version 30) with the Complex Samples module. All estimates are reported with 95% confidence intervals. Using national data for adults aged 15–49, we quantified sequential steps in the cascade: ever screened, ever diagnosed, prescribed medication among those diagnosed, and currently taking medication. Sex differences at each cascade step were formally assessed using design-based logistic regression, with odds ratios, confidence intervals, and p-values reported. We contextualized findings against prior nationally representative prevalence studies

Results

Among adults aged 15–49 years, 52.2% (95% CI 51.1–53.4) of women and 32.0% (95% CI 30.6–33.4) of men had ever had their blood pressure measured (OR 2.04, 95% CI 1.92–2.17, $p < 0.001$). Self-reported diagnosis was 8.0% (95% CI 7.5–8.4) for women and 4.6% (95% CI 4.2–5.1) for men (OR 1.39, 95% CI 1.25–1.54, $p < 0.001$), markedly lower than measured prevalence (30–38%). Among diagnosed individuals, prescription and current medication use did not differ significantly by sex ($p = 0.697$ and $p = 0.222$ respectively).

Conclusion

Substantial gaps exist across Nigeria's hypertension care cascade, particularly at detection stages. Sex differences were statistically significant at screening and diagnosis but absent at treatment stages, indicating that Nigeria's gender gap in hypertension care is fundamentally a detection problem rather than a treatment problem. These findings highlight urgent needs to expand accessible screening especially for men, improve linkage to care, and strengthen long-term medication adherence

INTRODUCTION

Hypertension is the single most important modifiable risk factor for cardiovascular disease (CVD) and premature mortality globally (1,2). The World Health Organization estimates that more than 1.4 billion adults live with hypertension worldwide, with two-thirds residing in low- and medium-income countries (LMICs), and many remaining undiagnosed or untreated (WHO, 2025) (3). In LMICs, rapid urbanization, lifestyle transitions, and health-system limitations have intensified the CVD burden, with hypertension emerging as a dominant risk factor (4). Between 1990 and 2019, the total number of adults with hypertension nearly doubled worldwide, with persistent gaps in detection and control especially pronounced in lower-resource regions, reflecting a global challenge in translating hypertension awareness into effective long-term care (5).

Nigeria faces a particularly large and complex hypertension challenge as population-based studies have documented persistently high measured hypertension prevalence typically between 30% and 38% among adults(4,6) with substantial variation across age, sex and geography. Despite this considerable burden, awareness, treatment, and blood-pressure control remain low. A recent systematic review reported that only 29% of Nigerians living with hypertension were aware of their condition, and treatment and control rates were even lower at 12.0% and 2.8% respectively(4). These data highlight major missed opportunities for early detection and sustained management.

Understanding the screening → diagnosis → treatment cascade is critical for strengthening national responses. Screening is the gateway to detection; diagnosis enables treatment initiation; and long-term medication adherence is essential to prevent complications such as stroke, heart failure, and chronic kidney disease. Yet few nationally representative studies in Nigeria have quantified the early steps of this care cascade, particularly lifetime blood-pressure screening and treatment continuation.

The new Nigerian Demographic and Health Survey (NDHS) 2023–2024 introduces new questions asking respondents whether they have ever had their blood pressure measured by a doctor or other health worker, whether they had ever been told they have high blood pressure (hypertension), and whether, if told, they were prescribed medication and were currently taking medication to control blood pressure (NDHS Tables 36–37) (7). These indicators allow, for the first time, the construction of nationally representative hypertension care cascade among younger adults (15–49 years).

To our knowledge, this is the first study to synthesize the NDHS 2023–2024 hypertension indicators into a structured national cascade, especially considering that previous versions of the NDHS did not capture hypertension indicators. By considering the NDHS findings within the broader literature on measured prevalence and cardiovascular health, this analysis highlights where Nigeria’s hypertension response faces the greatest obstacles. This can guide policymakers to prioritize interventions.

Our objectives were to describe national hypertension screening, diagnosis, prescription, and treatment patterns among adults aged 15–49, assess gender differences in cascade performance, and compare NDHS self-reported diagnosis with measured prevalence to contextualize detection gaps.

METHODS

Study Design and Data Source

This is a survey-weighted secondary analysis of individual-level NDHS 2023–24 microdata (the women’s and men’s microdata files). The NDHS 2023–24 was implemented between December 1, 2023 and May 7, 2024 covering all 36 states and the Federal Capital Territory, designed to produce estimates at national, urban/rural, zonal, and state levels.

Study Population

The analysis is restricted to women aged 15–49 ($n = 39,050$) and men aged 15–49 ($n = 10,876$), consistent with the NDHS individual-level eligibility criteria for these modules.

Outcome Variables

We extracted four NDHS variables: (1) ever screened – whether respondents have ever had their blood pressure measured by a health-care worker; (2) ever told (hypertension diagnosis) – whether respondents have ever been told they have high blood pressure, a self-reported diagnosis indicator; (3) prescribed medication – among those told they had hypertension, whether they were prescribed medication; (4) currently taking medication – whether respondents told they had hypertension were currently taking medication to control blood pressure.

Statistical Analysis

All estimates were survey-weighted using the published DHS sampling weights. Analyses were conducted using IBM SPSS Statistics (Version 30) with the Complex Samples module, which accounts for the complex sampling design. “Don’t know” and missing responses were excluded from all analyses. All proportions are reported with 95% confidence intervals. Sex differences at each cascade step were assessed using design-based logistic regression on a combined dataset of women and men, with sex as the predictor variable. Adjusted odds ratios (OR), 95% confidence intervals, and p-values are reported.

Ethical Considerations

NDHS obtained national ethical approval. This analysis uses publicly available aggregated data and contains no individual identifiers, so no additional human subject’s approval was required. We however obtained approval from the Demographic and Health Surveys (DHS) Program to use data from this survey for this study.

RESULTS

Tables 1 and 2 summarize the national hypertension cascade and sex-difference analysis.

Table 1
National hypertension care cascade among adults aged 15–49, NDHS 2023–24

Cascade Indicator	Women % (95% CI)	Men % (95% CI)
Ever had BP measured by a health worker	52.2 (51.1–53.4)	32.0 (30.6–33.4)
Ever told they have hypertension	8.0 (7.5–8.4)	4.6 (4.2–5.1)
Prescribed antihypertensive medication ¹	72.4 (70.3–74.5)	68.7 (64.2–73.2)
Currently taking antihypertensive medication ¹	53.6 (51.3–55.9)	50.8 (46.0–55.6)

¹Among individuals who reported ever being told they have hypertension

Only about half of women (52.1%) and one-third of men (32.0%) aged 15–49 reported ever having had their blood pressure measured by a health worker. This implies large missed opportunities for detection, particularly among men. Furthermore, self-reported diagnosis rates were substantially lower than national measured prevalence estimates (30–38%), indicating a large detection gap.

Sex Differences

Table 2
Sex differences across the hypertension care cascade

Cascade Step	Women % (95% CI)	Men % (95% CI)	OR (95% CI)*	p-value
Ever had BP measured	52.2 (51.1–53.4)	32.0 (30.6–33.4)	2.04 (1.92–2.17)	< 0.001
Ever told hypertensive	8.0 (7.5–8.4)	4.6 (4.2–5.1)	1.39 (1.25–1.54)	< 0.001
Prescribed medication ¹	72.4 (70.3–74.5)	68.7 (64.2–73.2)	0.96 (0.76–1.20)	0.697
Currently taking medication ¹	53.6 (51.3–55.9)	50.8 (46.0–55.6)	0.89 (0.73–1.08)	0.222

*Odds ratios represent women vs. men (male as reference category). ¹Among diagnosed individuals only.

Women had significantly higher odds of having been screened (OR 2.04, 95% CI 1.92–2.17, $p < 0.001$) and diagnosed (OR 1.39, 95% CI 1.25–1.54, $p < 0.001$) than men. In contrast, sex differences at the treatment stages were not statistically significant: prescription rates did not differ (OR 0.96, $p = 0.697$) nor did current medication use (OR 0.89, $p = 0.222$), indicating that once diagnosed, men and women access and maintain treatment at broadly comparable rates.

A consistent 18–20 percentage point decline was observed between prescription and current medication use in both sexes. The sex differences at these treatment stages were not statistically significant (prescription $p = 0.697$; current use $p = 0.222$), and the wide confidence intervals reflect the relatively small number of diagnosed individuals in the survey sample. Nonetheless, the absolute gaps are clinically meaningful as fewer than three-quarters of diagnosed individuals are on prescribed medication, and only about half are currently taking it, pointing to substantial challenges with long-term medication adherence that affect both sexes equally.

DISCUSSION

The findings from the 2023–2024 NDHS reveal substantial weaknesses across Nigeria's hypertension care cascade, reflecting long-standing challenges in screening, early detection, and sustained treatment. The low screening coverage observed, particularly among men indicates limited population-level opportunities for routine blood-pressure assessment. Similar sex disparities have been documented across sub-Saharan Africa, where women are more frequently screened due to greater contact with maternal, reproductive, and child-health services (8). In contrast, men tend to engage less with primary-care services, contributing to delayed diagnosis and a higher likelihood of presenting with advanced cardiovascular complications (9).

A critical finding of this study is that the gender gap in Nigeria's hypertension cascade is confined to the detection stages. Women had approximately twice the odds of ever being screened and significantly higher odds of receiving a diagnosis, yet prescription and current medication use were statistically equivalent between sexes ($p = 0.697$ and $p = 0.222$ respectively). This pattern indicates that Nigeria's gender gap in hypertension care is fundamentally a detection problem as once hypertensive individuals enter care, men and women receive and maintain treatment at comparable rates. Practically, this may mean that priority should be placed on expanding male-targeted screening pathways, such as workplace-based or community-based screening programmes.

Self-reported diagnosis rates in NDHS (8% among women and 4.6% among men) are strikingly lower than measured hypertension prevalence reported in population-based Nigerian studies. National surveys consistently place true prevalence between 30% and 38% (4,6). This suggests that only a small fraction of hypertensive individuals are aware of their condition. This severe detection gap aligns with findings from broader African analyses, which indicate that more than half of hypertensive adults on the continent remain undiagnosed (10). This asymptomatic nature of hypertension, combined with barriers such as low health literacy, low socioeconomic status, and limited access to preventive services, contributes to this gap (11).

Treatment patterns provide additional insight into system-level constraints. Although most individuals diagnosed in the NDHS had been prescribed antihypertensive medication, approximately one in five discontinued therapies between prescription and current use. This level of attrition is consistent with prior Nigerian studies reporting widespread medication nonadherence, attributed to drug costs, lack of

health insurance, poor counseling, and level of health education (12–14). Sustained adherence is essential for reducing cardiovascular morbidity, studies demonstrated that consistent antihypertensive therapy lowers the risk of stroke, myocardial infarction, and heart failure (15). Therefore, the discontinuity observed in the NDHS underscores missed opportunities for long-term CVD prevention.

These findings have direct implications for Nigeria’s cardiovascular-health response. First, population-level screening must be expanded through accessible channels, including community outreach, workplace programs, and pharmacy-based initiatives. Evidence from other LMICs shows that decentralizing screening and integrating it into routine health services can significantly improve early detection of other NCDs like cancer(16). Second, linkage to care requires strengthening through standardized referral pathways, task-shifting strategies, and improved continuity of care within primary healthcare. Third, medication access must be addressed through improved supply-chain reliability, standardized treatment protocols, and financial protections to reduce out-of-pocket costs. The WHO HEARTS package for NCDs provides a tested framework for achieving these goals and could support national implementation (17).

This study has several strengths, including its use of individually-weighted NDHS 2023–24 microdata with formal design-based significance testing of sex differences. However, we acknowledge limitations. All indicators are self-reported and may underestimate true diagnosis or treatment levels. The NDHS age range (15–49 years) excludes older adults, who bear the highest hypertension burden. Diagnosis-conditioned estimates are based on relatively small diagnosed subsamples, particularly among men, producing wider confidence intervals that should be interpreted with appropriate caution.

CONCLUSION

The NDHS 2023–2024 provides critical new insights into early-stage hypertension care in Nigeria. Persistent gaps in screening, diagnosis, and treatment continuity highlight the urgency of strengthening national NCD programmes. Formal significance testing confirms that sex differences are concentrated at the detection stages rather than the treatment stages, establishing that expanding male-targeted screening is the priority intervention for closing Nigeria’s gender gap in hypertension care.

Declarations

Funding Statement:

This study received no funding.

Author Contribution

HEN conceptualized and designed the study. HEN, CBN, and OMO contributed to methodology, data curation, and formal analysis. HEN, OMO, OEH, IA, CCE, EKI, CMOE, DD, KO, MI, TB, OD, ECA, ACA, and

CBN contributed to the interpretation of data and study findings. HEN drafted the original manuscript. OMO, OEH, IA, CCE, EKI, CMOE, DD, KO, MI, TB, OD, ECA, ACA, and CBN critically reviewed and revised the manuscript for important intellectual content. CBN supervised the study and provided overall scientific oversight. All authors contributed to manuscript development, reviewed and approved the final version of the manuscript, and agree to be accountable for all aspects of the work.

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We acknowledge the prompt approval by the DHS for this study.

Data Availability

The data that support the findings of this study are available from the Demographic and Health Surveys (DHS) Program. The 2023–2024 Nigeria Demographic and Health Survey (NDHS) datasets used in this analysis are publicly available upon registration, request, and approval through the DHS Program website.

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Figures

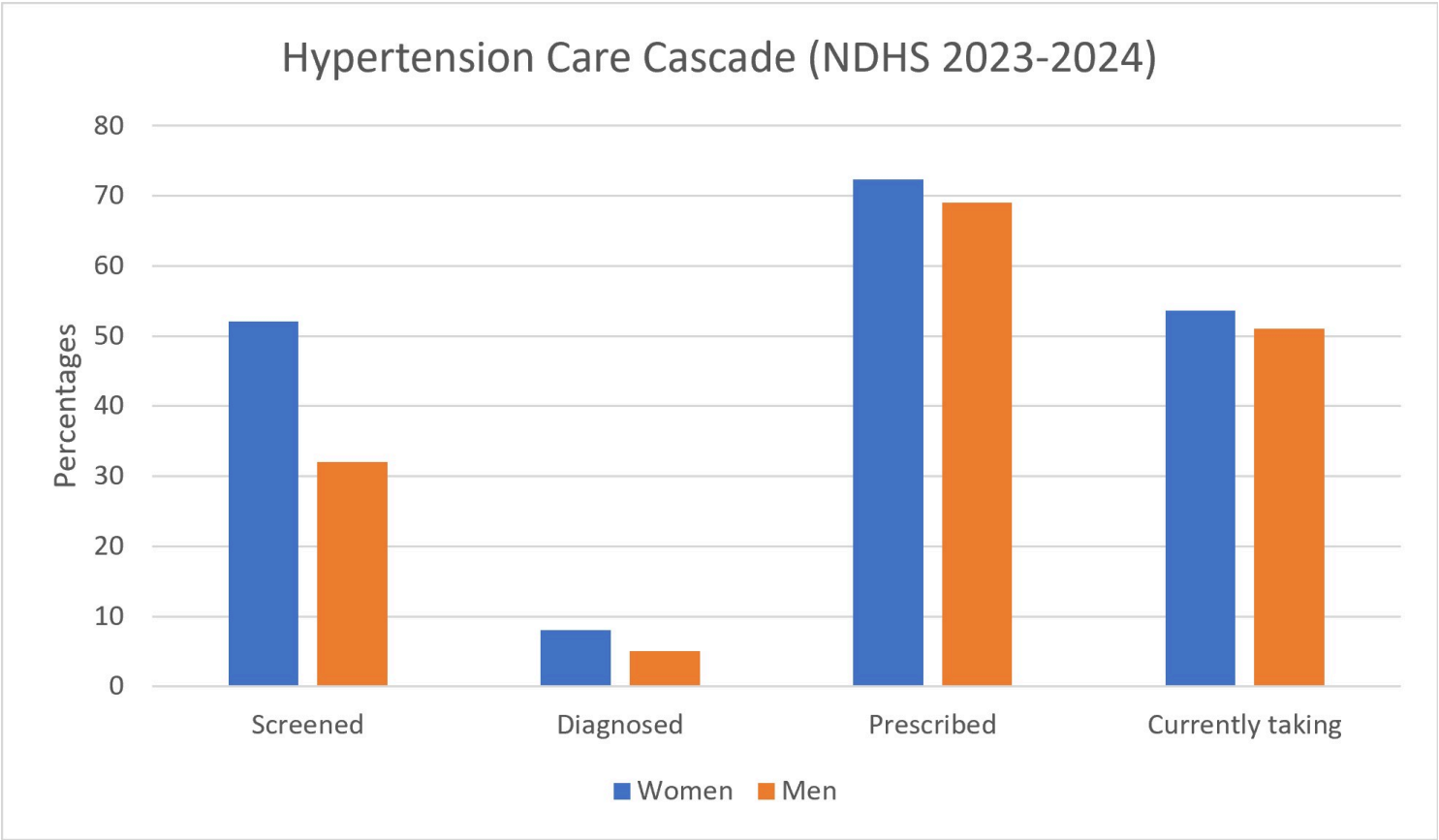


Figure 1

Hypertension care cascade among adults aged 15-49 years in Nigeria, NDHS 2023 -2024